Required Wetland Mitigation Credit Table and Worksheet

TIP: Leave cursor over each factor or option below to pop-up helpful information or definitions.

Required Wetland Mitigation Credit Table

FACTORS	OPTIONS					
Lost Type	Type C 0.2		Type B 2.0		Type A 3.0	
Priority Category	Tertiary 0.5		Secondary 1.5		Primary 2.0	
Existing Condition	Very Impaired 0.1	Impaired 1.0		Partially Impaired 2.0		Fully Functional 2.5
Duration	0 to 1 Year 0.2	1 to 3 Years 0.5	3 to 5 Years 1.0		5 to 10 Years 1.5	Over 10 Years 2.0
Dominant Impact	Shade 0.2	Clear 1.0	Drain 2.0	Dredge 2.5	Impound/Flood 2.5	Fill 3.0
Cumulative Impact	< 0.25 Acre 0.1	0.25 - 0.99 Acres 0.2	1.0 - 2.99 Acres 0.5		3.0 - 9.99 Acres 1.0	≥ 10.0 Acres 2.0

NOTE: The cumulative impact factor for the overall project should be included in the sum of factors for each impacted area on the Required Wetland Mitigation Credit Worksheet

Required Wetland Mitigation Credit Worksheet

FACTOR	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6
Lost Type	Type B					
Priority Category	Tertiary					
Existing Condition	Impaired					
Duration	Over 10 Years					
Dominant Impact	Fill					
Cumulative Impact	< 0.25 Acre					
Sum of Factors	8.6					
Impacted Area	0.165					
R x AA=	1.419					

Required Wetland Mitigation Credits = Σ (R x A) = **1.419**

Attachment D

Agency Consultation

December 8, 2021

U.S. Fish and Wildlife Service
South Carolina Ecological Services Field Office
176 Croghan Spur Road, Suite 200
Charleston, SC 29407

SUBJECT: Silicon Ranch Lambert I and II Solar Facility (Georgetown County, South Carolina)

Silicon Ranch Corporation (SRC) is proposing to construct SR Lambert I and II photovoltaic solar facilities (Project) located in Georgetown County, South Carolina about 7 miles south of the Town of Andrews between Saints Delight Road and Walker Road (**Appendix A** - **Figure 1 and 2**). This letter assesses the Project effects on federally listed species protected under the Endangered Species Act.

PROJECT DESCRIPTION

The Project site is owned by Resource Management Service timber company, with which SRC has an agreement to explore solar development options. Two solar arrays are proposed within the 2,082-acre site (Study Area), known as Lambert I and II. The Lambert I area is proposed in the northeastern portion of the site. The Lambert II area is proposed in the southern portion of the site (**Appendix A** - **Project Design Plans**).

The Project would involve the construction of solar panels supported by driven piles, gravel access roads, a site boundary fence, temporary sediment basins for stormwater management, underground electrical conductor lines, along with the construction of a substation and switching station. The Project site has historically been used for silviculture for several decades. The majority of the site has been recently timbered by the current landowner. Grubbing of tree stumps and minor grading would be conducted by SRC in preparation for Project construction. Some temporary impacts would occur on timbered wetlands which would remain underneath the panels and be stabilized with a wetland seed mix. Construction of the solar facilities is tentatively scheduled to begin in spring or summer of 2022.

METHODS

A desktop review and site investigation were conducted of the Study Area by HDR, Inc. (HDR). The United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database and the South Carolina Department of Natural Resources (SCDNR) database was used to identify and analyze the federally protected species with a potential to occur within the Study Area (See **Table 1** and **Appendix B, Species Reports**). These database searches helped to focus the site investigation on the specific habitat in the Study Area that could support the federally protected species. A site investigation was initially conducted on July 21, 2020 to confirm the presence or absence of suitable habitat for federal listed species and collect data supporting effects determinations. The site has since been revisited in October 2021 for an updated site conditions assessment.

Table 1. Federally Protected Species analyzed for Project Effects

Species	Habitat	Federal Status[1]	Record Status[2]	Survey window	Habitat Present
REPTILES					
Green sea turtle *Chelonia mydas*	Open oceans and inland bodies of water; nesting habitat nearshore	T	No record	NA	No

Species	Habitat	Federal Status[1]	Record Status[2]	Survey window	Habitat Present
Kemp's ridley sea turtle *Lepidochelys kempii*	Open oceans and inland bodies of water; nesting habitat nearshore	E	No record	NA	No
Leatherback sea turtle *Dermochelys coriacea*	Open oceans and inland bodies of water; nesting habitat nearshore	E	No record	NA	No
Loggerhead sea turtle *Caretta caretta*	Open oceans and inland bodies of water; nesting habitat nearshore	T	Current	NA	No
MAMMALS					
Northern long-eared bat *Myotis septentrionalis*	Hibernate in caves, mines, or tunnels during winter; roosts in tree bark and cavities in summer	T	No record	April 1 to Nov 15	Yes (summer)
PLANTS					
American chaffseed *Schwalbea americana*	Sandy, acidic, seasonally moist to dry soils; areas frequently mowed; open, moist pine flatwoods	E	No record	April to June	No
Canby's dropwort *Oxypolis canbyi*	Cypress ponds and sloughs, and wet savannas	E	No record	Aug to Oct	No
Pondberry *Lindera melissifolia*	Wetland sinks, ponds, and other depressions in coastal areas	E	No record	Feb to mid-March	No
INSECTS					
Monarch butterfly *Danaus plexippus*	Habitat with milkweeds plants (*Asclepias* spp.), the primary food plant for larvae	C	No record	Summer to Fall	Yes (foraging)
BIRDS					
Bald eagle *Haliaeetus leucocephalus*	Rivers, lakes, marshes, and ponds	BGEPA	Current	Oct 1 to May 15	No
Eastern black rail *Laterallus jamaicensis*	Salt and brackish marshes with dense cover	T	Current	April to June	No
Piping plover *Charadrius melodus*	Ocean shores with sparse vegetation; in winter - coastal beaches, sandflats, and mudflats	T	No record	March 1 to July 31	No
Red knot *Calidris canutus rufa*	Sandy beaches, salt marshes, lagoons, mudflats, estuaries, bays, mangroves	T	No record	July to Nov	No
Red-cockaded woodpecker *Picoides borealis*	Nest in mature (over 80 years) longleaf and southern pine forests; Forage in stands over 30 years old	E	Current	March 1 to July 31	No
Wood stork *Mycteria americana*	Freshwater and estuarine wetlands, primarily nesting in cypress or mangroves	T	Current	Feb 15 to Sep 1	No

1 **T** = Threatened; **E** = Endangered; **C** = Candidate; **BGEPA** = Bald and Golden Eagle Protection Act
2 **Current** = The species has been observed in the county within the last 50 years.

DISCUSSION

The Study Area has been used for silviculture for over fifty years. The silviculture practices have reduced the flora and fauna diversity and altered hydrology and soils in the Study Area. Currently, the site is dominated by large open, timbered areas and limited remaining tracts of planted pine (15-25 years of age). The Study Area also contains grassy areas with sandy soils along a maintained electrical transmission utility right-of-way (ROW) and forested wetlands with loamy soils (**Appendix A, Site Photographs** and **Appendix A, Figures 3 and 4**).

The Project is expected to result in about 2 acres of permanent impacts on wetlands during the construction of gravel access roads and substations. The Project would also result in approximately 135

acres of temporary wetland impacts during site preparation, creation of sediment basins, and installation of solar panels. Most of the streams in the Study Area have been channelized or are roadside ditches. Discharge of fill is not anticipated in the temporary impact areas and wetlands would remain underneath the solar panels. Applicable stormwater management practices would be implemented to comply with erosion and sediment control regulations. A Clean Water Action 404/401 Joint Permit Application and Coastal Zone Consistency Request is scheduled for submittal in December 2021.

The site does not contain open ocean, salt or brackish marshes, mudflats or sandflats, mangroves, cypress swamps, ponds, wet savannas, estuaries, large rivers or lakes, or mature pine forests. Therefore, the Canby's dropwort and pondberry would not occur in the Study Area due to the lack of suitable wetland/aquatic habitat. Also due to a lack of suitable habitat, none of the six federal listed birds nor the four sea turtles are expected to occur in the Study Area or be indirectly impacted by Project activities. USFWS coordination indicated a 30 year old red-cockaded woodpecker record about 2.5 miles north of the Study Area (**Appendix C**). However, the young age and homogenous forests in the Study Area are not suitable habitat for the red-cockaded woodpecker.

The monarch butterfly was not a candidate species when Project surveys were conducted in 2020 and therefore was not specifically assessed during the site investigation. Due to the silviculture land use in the Study Area, potentially suitable milkweed habitat with full sun and drained loamy soils has been historically limited to roadsides and the electrical utility ROW. Monarchs could forage in the Study Area during migration but due to the lack of detected milkweed (*Asclepias* spp.) and limited suitable foraging habitat, the monarch butterfly is not anticipated to breed or routinely occupy the Study Area other than for foraging during migration.

Potentially suitable habitat was determined to occur in the Study Area for the northern long-eared bat (NLEB) and American chaffseed. The site investigation identified the electrical utility ROW to be potentially suitable habitat for the American chaffseed. A species-specific survey was subsequently conducted in the utility ROW for the American chaffseed but did not detect the plant.

American chaffseed (*Schwalbea americana*)

The American chaffseed is an erect perennial herb with unbranched stems and large, purplish-yellow, tubular flowers. Plants are found in sandy, acidic, and seasonally moist to dry soils. It is generally found in open, moist pine flatwoods, fire-maintained savannas, ecotonal areas between peaty wetlands and xeric sandy soils, and other open grass-sedge systems.[1] A known population of American chaffseed located 20 miles south of the Study Area in the Francis Marion National Forest was visited with US Forest Service personnel prior to conducting the species-specific survey within the Study Area.

The Study Area predominately contains recently timbered and planted pine forests with moist, loamy soils and dense understory. The species-specific survey found that the electrical utility ROW did not exhibit maintained, xeric soils, as supported by the presence of yellow trumpet pitcher plants (*Sarracenia flava*), often found in wetlands with long periods of standing water. The ROW also contained a wide range of grass and shrub species, such as orange milkwort (*Polygala lutea*), giant white-topped sedge (*Dichromena latifolia*), inkberry (*Ilex glabra*), savannah meadow beauty (*Rhexia alifanus*), and leathery rush (*Juncus coriaceus*), that would outcompete the American chaffseed. Therefore, suitable habitat for the American chaffseed does not occur within the utility ROW or elsewhere in the Study Area.

[1] FWS.gov (American chaffseed)

Northern long-eared bat (*Myotis septentrionalis*)

The NLEB is a medium-sized bat that hibernates from late fall through winter (November 15 - March 31), primarily in caves and mines. In the spring and summer months (April 1 – November 15) they roost during the day underneath bark, cavities, or crevices of trees and snags. The NLEB forages in open areas with standing water or large flowing streams.[2]

Most of the Study Area contains recently cleared areas with limited remaining planted pine about 15-25 years of age with a relatively dense understory. A few patches of mixed pine-hardwoods were identified in the Study Area with potentially suitable habitat for bat summer roosting (**Appendix A, Figure 5**). Additionally, areas were identified in the Study Area with trees having exfoliating bark and crevices suitable for summer roosting. However, the majority of upland pine trees have since been cleared from areas scheduled for solar panel installation (**Appendix A, Site Photographs**).

EFFECTS DETERMINATION

Small pockets of summer roosting habitat for the NLEB and limited foraging habitat for the monarch butterfly occur in the Study Area. To the extent possible, the Project would minimize effects on NLEB by conducting the remaining tree clearing in mapped suitable roosting habitat (**Appendix A, Figure 5**) during the inactive season (November 15 and March 31). Although some limited tree clearing could extend into the active season for NLEB, the majority of Project uplands have been cleared of trees and the areas with forested hardwoods, if not already cleared, would be largely avoided during development (**Appendix A, Site Photographs**). Therefore, because the Study Area currently contains limited or no remaining suitable roosting habitat for the NLEB in areas planned for Project development, the Project may affect but is not likely to adversely affect the NLEB.

The Project could result in the temporary displacement of a few foraging monarch butterflies but is not expected to result in adverse effects on the species or the death of individuals. Therefore, the Project may affect, but is not likely to adversely affect the monarch butterfly. No suitable habitat for the remaining 13 identified species occurs within the Study Area; therefore, no effects on these species would occur.

If the Project schedule or scope changes prior to construction, additional consultation with the USFWS would be initiated regarding the potential impacts on federal listed species. For additional information, please contact Andrew Phillips at 720.876.7667 or by email at andrew.phillips@hdrinc.com.

HDR Engineering, Inc. of the Carolinas

Andrew Phillips
Senior Biologist, HDR Inc.

[2] SCDNR - Bats

Appendix A – Figures/Plans/Site Photographs

Figure 1. Project Vicinity
Figure 2. USGS Topographic Quadrangle
Figure 3. Aerial Imagery, Wetlands, and Photo Points
Figure 4. NRCS Soils
Figure 5. NLEB Suitable Habitat

Project Design Plans (HDR Layout)
Site Photographs (1 - 6)

Appendix B – Special Status Species Reports

USFWS IPaC List of Federal Species Report
SCDNR Data Explorer Project Report

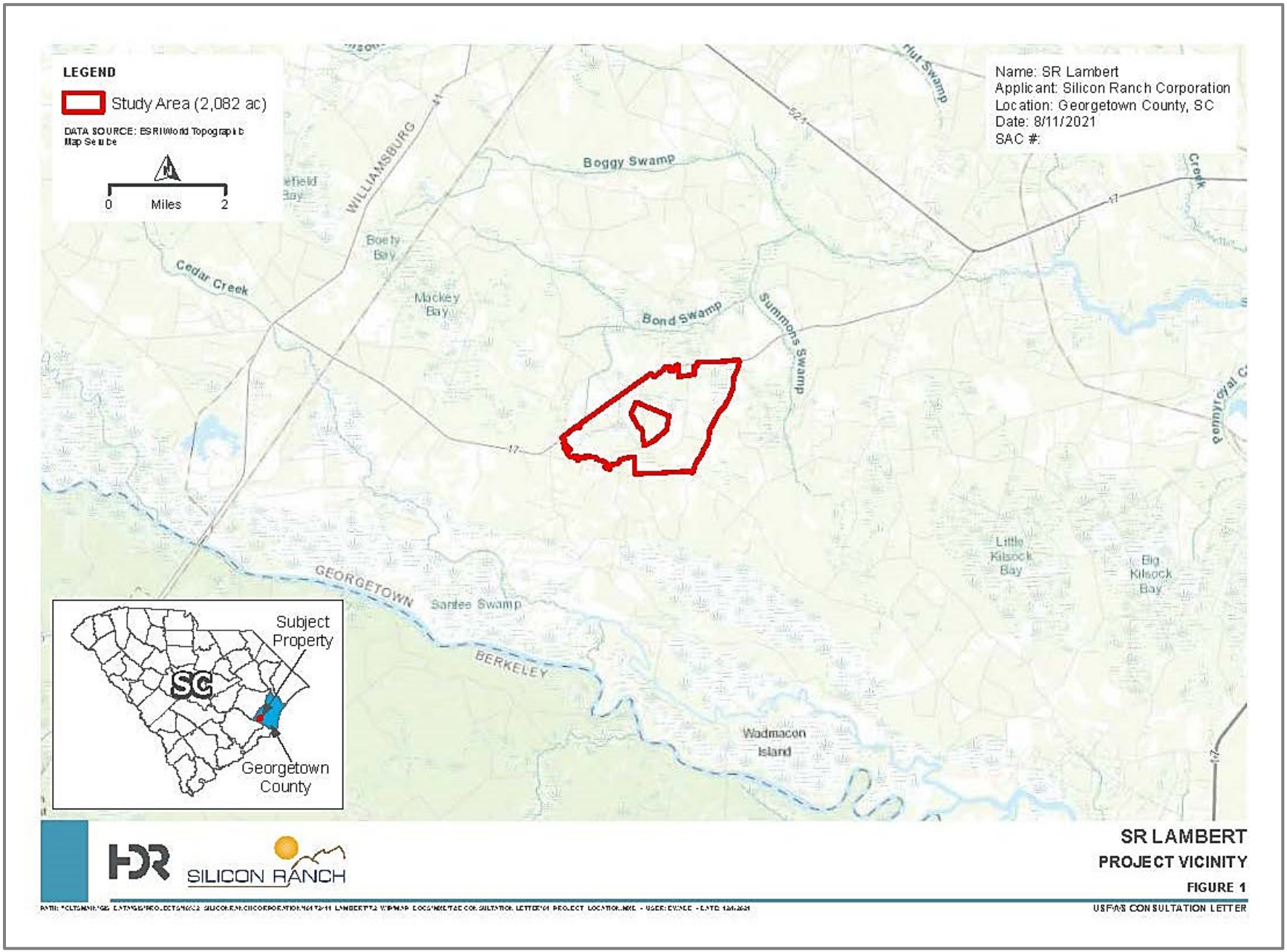
Appendix C

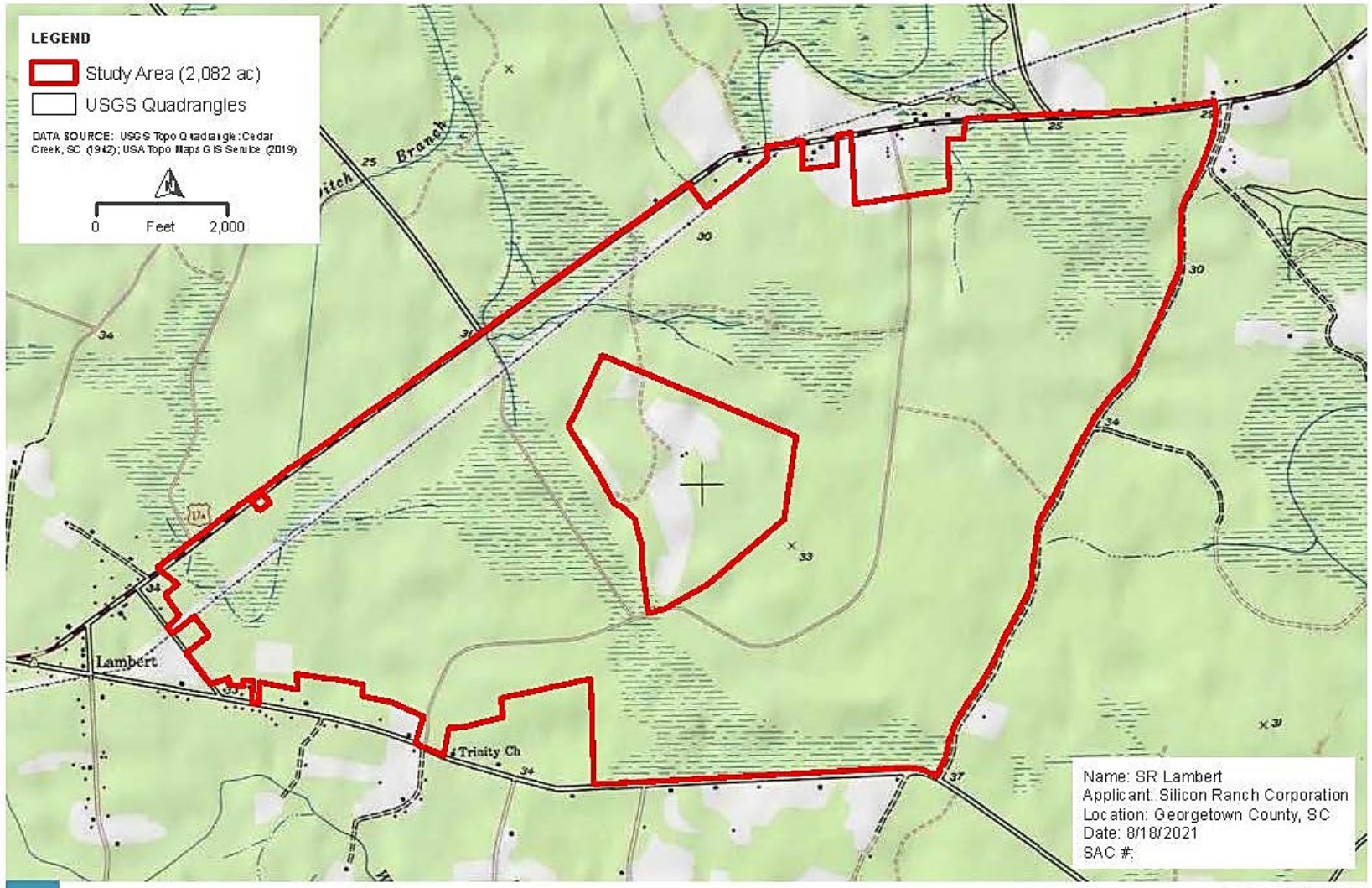
USFWS Correspondence

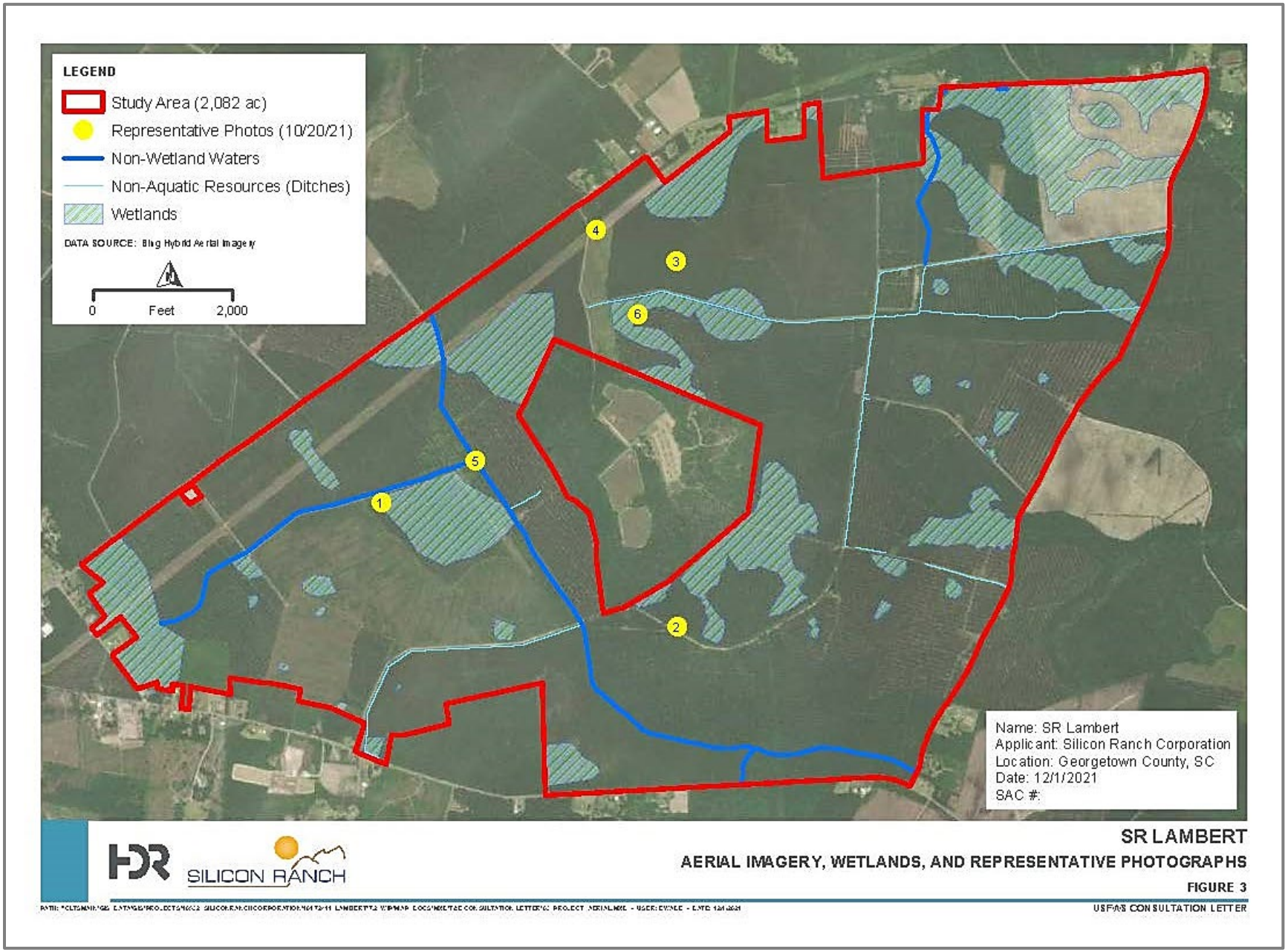
CC: Mr. Connor Echols, SRC
Ms. Blair Wade, HDR

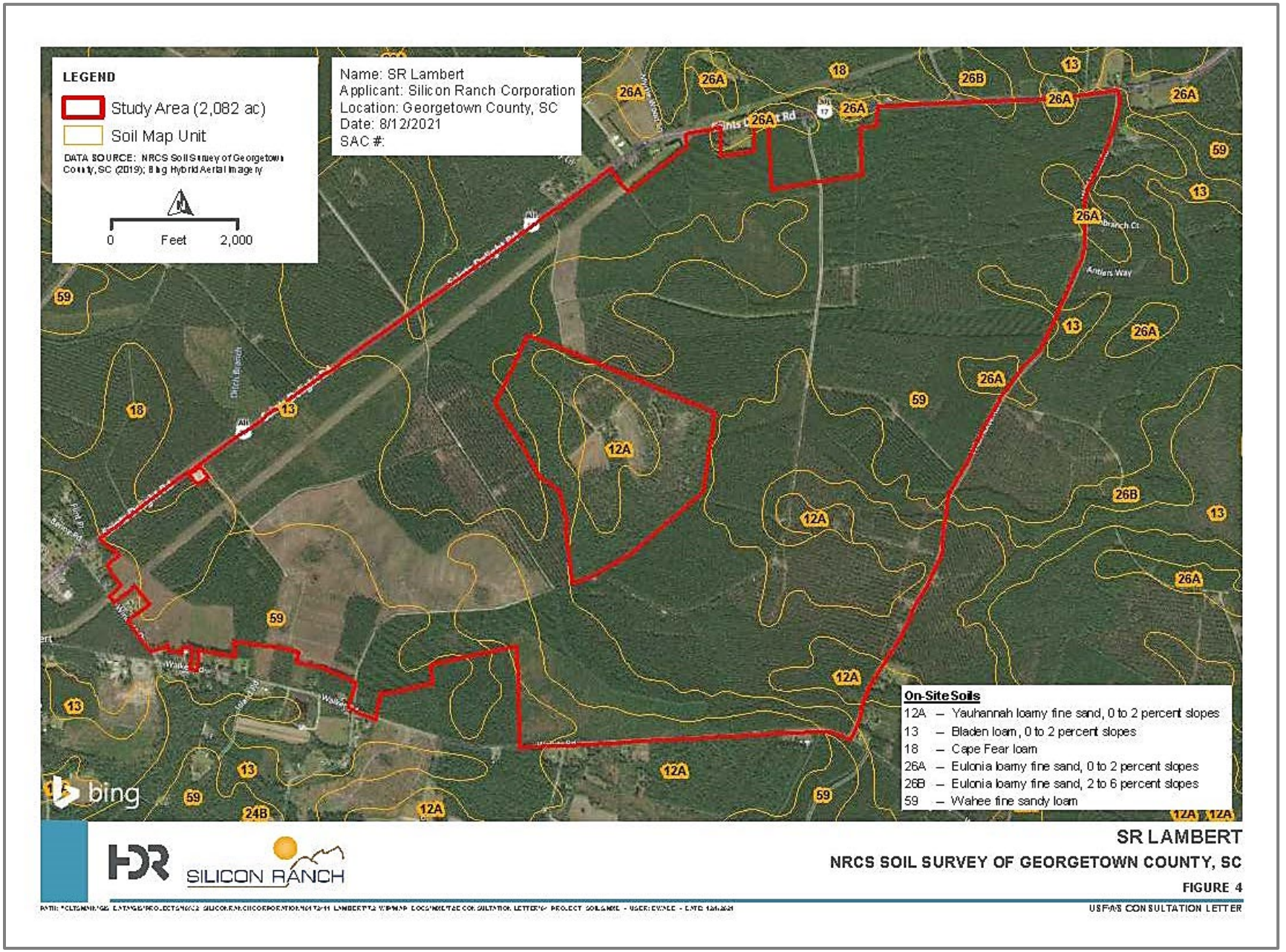
Appendix A

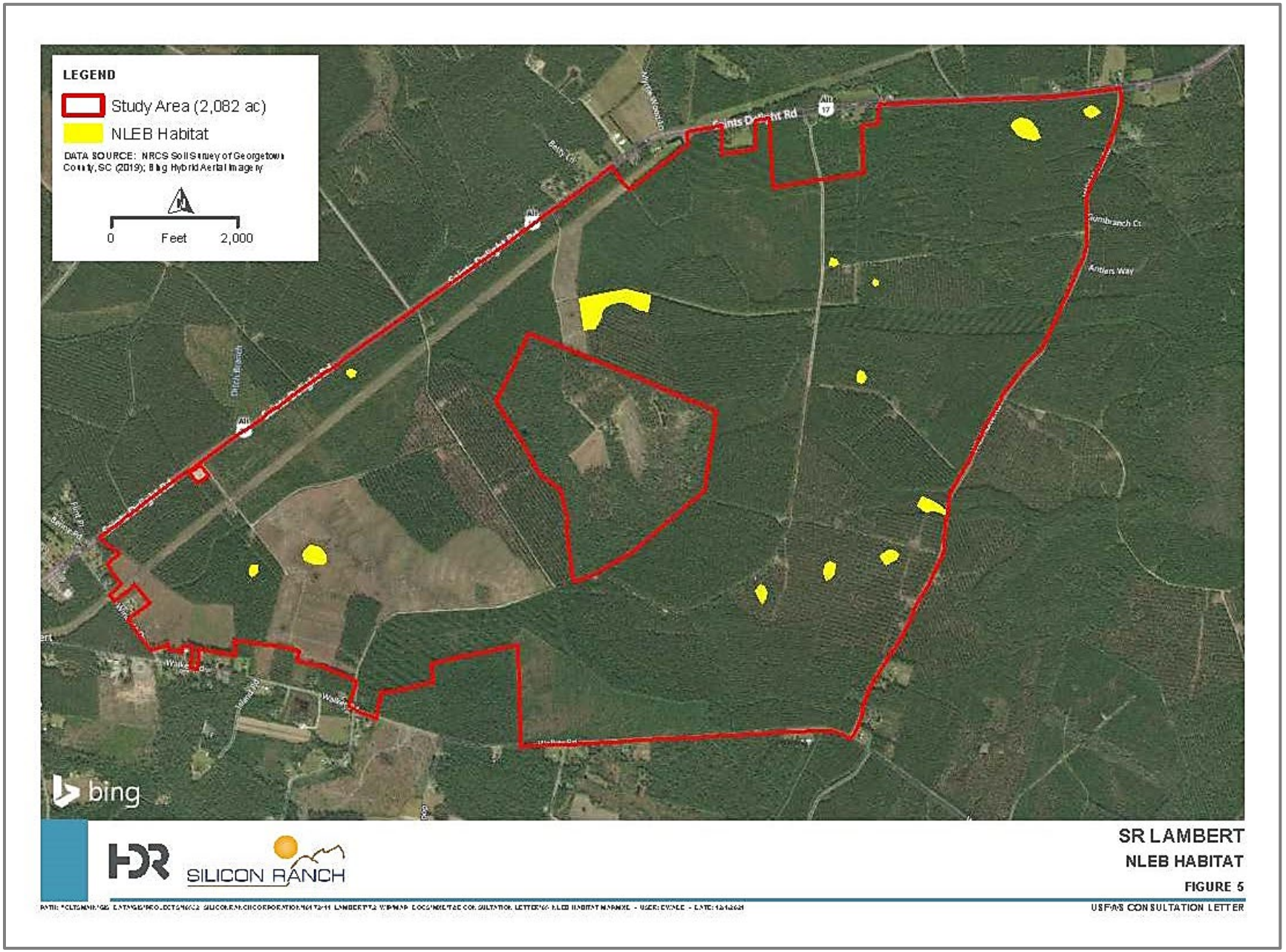
Figures, Design Plans, and Site Photographs

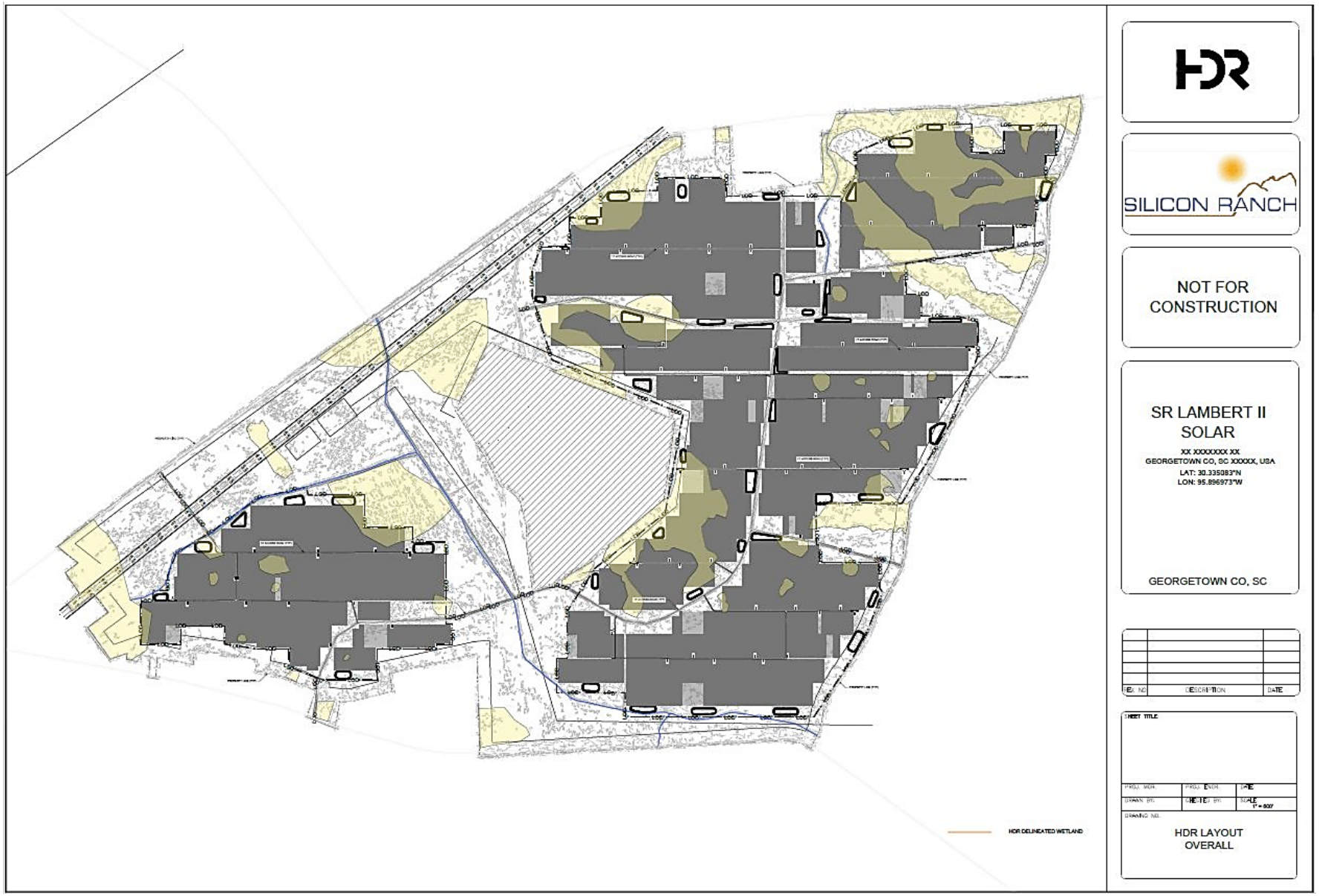












Photograph 1 – Representative Site Conditions (October 20, 2021)

Photograph 2 – Representative Site Conditions, recently timbered (October 20, 2021)

Photograph 3 – Representative Site Conditions, recently timbered (October 20, 2021)

Photograph 4 – Transmission Right-of-Way (October 20, 2021)

Photograph 5 – Non-Wetland Water, facing downstream (October 20, 2021)

Photograph 6 – Mixed hardwood wetlands (October 20, 2021)

Appendix B

IPaC and SCDNR Species Reports

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Carolina Ecological Services
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558
Phone: (843) 727-4707 Fax: (843) 727-4218
http://www.fws.gov/charleston/

In Reply Refer To:
Consultation Code: 04ES1000-2022-SLI-0044
Event Code: 04ES1000-2022-E-00093
Project Name: Silicon Ranch Lambert Solar Facility

October 16, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

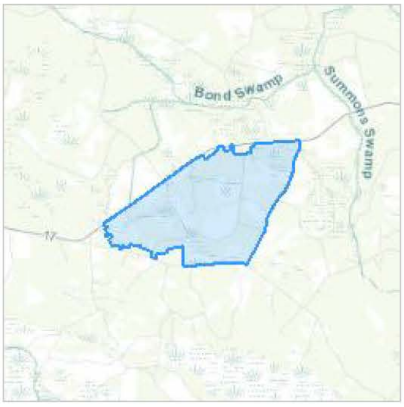
South Carolina Ecological Services
176 Croghan Spur Road, Suite 200
Charleston, SC 29407-7558
(843) 727-4707

Project Summary

Consultation Code: 04ES1000-2022-SLI-0044
Event Code: Some(04ES1000-2022-E-00093)
Project Name: Silicon Ranch Lambert Solar Facility
Project Type: POWER GENERATION
Project Description: Silicon Ranch Corporation is proposing to construct SR Lambert Solar Facility (Project) located in Georgetown County, South Carolina about 7 miles south of the Town of Andrews between Saints Delight Road and County Road S 22-387. Two solar arrays are proposed within the 2,082-acre site (Study Area), known as Lambert I and II.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.3349855,-79.54148766228519,14z



Counties: Georgetown County, South Carolina

Endangered Species Act Species

There is a total of 14 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Eastern Black Rail *Laterallus jamaicensis ssp. jamaicensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered
Wood Stork *Mycteria americana* Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
Green Sea Turtle *Chelonia mydas* Population: North Atlantic DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Kemp's Ridley Sea Turtle *Lepidochelys kempii* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5523	Endangered
Leatherback Sea Turtle *Dermochelys coriacea* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle *Caretta caretta* Population: Northwest Atlantic Ocean DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
American Chaffseed *Schwalbea americana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1286	Endangered
Canby's Dropwort *Oxypolis canbyi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7738	Endangered
Pondberry *Lindera melissifolia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1279	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

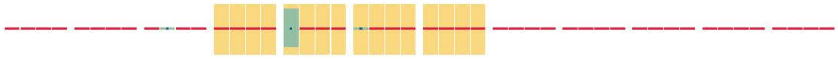
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Prothonotary Warbler BCC Rangewide (CON)



Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?